

APPENDIX

State Winter Application Restrictions¹

The table is a compilation of winter spreading restrictions based on state technical standards for nutrient management that apply to NPDES-permitted CAFOs, as identified to EPA by the Director of the NPDES permitting authority for each state. Where possible, EPA has indicated which requirements apply only to NPDES-permitted CAFOs and which also apply to state-permitted CAFOs or some broader category of AFOs or CAFOs. It should be noted that non-specific restrictions (e.g., “Nutrients shall not be applied to frozen, snow-covered, or saturated soil if the potential risk for runoff exists”) are not included in the table as they do not provide sufficient clarity on when manure should or should not be applied under winter conditions to be considered a winter application restriction. Some states may have additional winter spreading restrictions that were not identified by the state Director or that are not part of the state’s technical standards for NPDES-permitted CAFOs. EPA welcomes readers’ feedback to improve the contents of the table.

¹ Please note that this table was compiled for an earlier EPA exercise on status of state requirements. States may have since updated their requirements, and EPA welcomes any information regarding these updates.

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
Alabama	✓					<p>Applicable to all operations:</p> <ul style="list-style-type: none"> • Nutrients shall not be applied where soils are frozen or snow covered. • Nitrogen sources should not be applied more than 30 days prior to planting of the crop. • Animal manure... or wastewater will not be applied in the fall or winter unless applied to an actively growing crop making sufficient growth to utilize the nutrients that are applied...In North Alabama from approximately November 15 to February 15, apply no more than 30 pounds of nitrogen per acre to the crops... if the crop meets the minimum grazing height requirements of NRCS conservation practice standard, <i>Prescribed Grazing-528A</i>. <p>Applicable to NPDES-permitted and state-registered CAFOs: Land application of waste/wastewater shall not be undertaken or continue when soil is saturated..., frozen, covered with ice or snow, during precipitation, or when significant precipitation... is reasonably expected within the next 72 hours.</p>	<p>590 standard Nutrient Application Method and Timing</p> <p>State regulation Chapter 335-6-7-.26(2)(k)</p>
Alaska					✓		
Arizona				✓		<p>Applicable to all operations: Identical to national 590 standard</p>	<p>590 standard Nutrient Application Timing and Placement</p>
Arkansas	✓			✓		<p>Applicable to NPDES-permitted CAFOs: Wastes shall not be land applied to soils that are saturated, frozen, covered with snow, during rain, or when precipitation is imminent.</p>	<p>General permit 4.2.1.6</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						Applicable to all operations: Identical to national 590 standard	590 standard Nutrient Application Timing and Placement
California – North Coast Region	✓					Applicable to NPDES-permitted CAFOs: Manure shall not be applied to land... when soils are frozen or snow-covered.	State technical standards Attachment C of general permit
California – Santa Ana Region				✓		Applicable to all operations: Identical to national 590 standard	590 standard Nutrient Application Timing and Placement
Colorado		✓				Applicable to NPDES-permitted CAFOs: Process wastewater shall not be applied to frozen or flooded land application sites.	General permit III(A)(6)(d) State regulation 61.17(8)(b)(viii)(D)
Connecticut					✓		
Delaware		✓				Applicable to all operations: Nutrients shall not be applied to frozen and/or snow-covered ground, or when the top two inches are saturated. Winter application must be in compliance with the Delaware Nutrient Management certification program. Exceptions can be made for surface-applied liquid manure when the following conditions are met and adequate conservation measures are installed to prevent the offsite delivery of nutrients. 1. The application must be recommended by a nutrient consultant. 2. The application must be consistent with the required setback restrictions.	590 standard Nutrient Application Timing and Placement

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>3. Fields must have 30% residue or an established cover crop or vegetative cover adequate to accommodate applications necessary due to inadequate storage.</p> <p>4. Application rates must be minimized and available crop acreage used to the extent practical.</p> <p>5. Application must not exceed the nutrient need of the crop for which nutrients are being managed. The application rate per acre must not exceed the crops' phosphorus removal rate or 50% of the crops' nitrogen removal rate.</p> <p>6. Application shall be on the flattest ground available.</p>	
Florida					✓		
Georgia	✓					<p>Applicable to all operations: Do not apply nutrients to the soil surface if nutrient movement to buffers or bodies of water is expected within 24 hours. This precludes spreading manure under the circumstances below:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils • flooded soils or when the top 2 inches of soil are saturated from rainfall or snow melt. 	590 standard Nutrient Application Timing and Placement
Hawaii					✓		
Idaho			✓			<p>Applicable to all operations: Manure must not be surface-applied if nutrient losses offsite are likely. This prevents spreading on;</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils, and • when the top 2 inches of soil are saturated from rainfall, snow melt, or irrigation application of nutrients. <p>Exceptions for the above criteria is made for the emergency application of lagoon slurry/wastewater where has been determined by either ISDA or EPA that the lagoon is at risk and the risk from field application is</p>	590 standard Application of Manure and Organic By-Products

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>less than the risk associated from a direct discharge from the lagoon. The field has to be prepared to prevent a direct discharge from the field and specified conditions are met and adequate conservation measures are installed to prevent the offsite delivery of nutrients.</p> <p>At a minimum, the following site and management factors must be considered;</p> <ul style="list-style-type: none"> • slope, • soil surface condition (cross slope rough tillage), • organic residue and living covers, • amount and form of manure to be applied, • adequate setback distances to protect local water quality, • liquid waste will not be allowed on sod or perennial crops, and • rates of application will be determined using a water budget process. 	
Illinois		✓		✓		<p>Applicable to all operations:</p> <p>Design Criteria for Field Application of Livestock Waste, Livestock Management Facilities Act, Part 900, Part 560 states that livestock waste application on frozen or snow-covered land should be limited to land areas on which land slopes are <5% or where adequate erosion control practices exist.</p>	<p>State statute 510 ILCS 77/20(f)(9)</p> <p>State regulation Title 35 Illinois Administrative Code 560, Sections 560.206 and 560.207</p> <p>Title 8, Chapter I, Subchapter t, Part 900 Livestock Management Facilities Regulations, Section 900.803(s), Page 48</p>

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						<p>Applicable to all operations: Standard 590 states that nutrients shall not be surface applied on frozen and/or snow-covered soils, and/or when the top 2 inches of soil are saturated from rainfall or snow melt.</p> <p>Applicable to all operations: Illinois Agronomy Handbook states that if manure applications cannot be accomplished in the late fall, wait until the spring to do the application. Surface application of manure on frozen soils not only can result in substantial N loss, it could be an environmental hazard.</p> <p>Applicable to NPDES-permitted CAFOs: Livestock waste shall not be applied to frozen, snow covered or ice covered land if the application of the livestock waste will produced runoff to waters of the State.</p>	<p>IL NRCS 590, Nutrient Application Timing and Placement, Page 3</p> <p>Illinois Agronomy Handbook, Managing Nitrogen, Winter applications</p> <p>General Permit, Special Condition 4(c)(vii)</p>
Indiana	✓	✓	✓	✓		<p>Applicable to large and NPDES-permitted CAFOs: For large CAFOs or CAFOs with a NPDES permit, surface application of manure, litter, or process wastewater to frozen or snow covered ground is prohibited, unless allowed under an NPDES permit. Injection or incorporation of manure into the soil on the same day is not prohibited. Other CAFOs can apply manure under emergency conditions or where previously permitted with 120 days of storage with restrictions: (A) no application to land with a slope greater than 2%, unless there is 40% crop residue or vegetated crop cover on the land application site. (B) No application in a flood plain. (C) Application may not be closer than 200 feet from any surface water. (D) The application rate for all farms can be no more than a total of 50% of the agronomic rate, Applicable all operations:</p>	<p>State regulation Title 327, Article 19</p> <p>590 standard</p>

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>NRCS 590 states that with the exception of topdress applications on winter wheat, no surface applications of manure, biosolids or other organic by-products or P containing commercial fertilizers are allowed:</p> <ul style="list-style-type: none"> • on frozen and/or snow-covered soils, or • when the top 2 inches of soil are saturated from rainfall or snow melt. 	Nutrient Application Timing and Placement
Iowa			✓			<p>Applicable to “confinement feeding operations*”: A confinement feeding operation that is constructed or expanded on or after July 1, 2009... shall not surface-apply liquid manure on frozen or snow-covered ground when there is an emergency, as described in subrule 65.3(4), unless the operation has a minimum of 180 days of manure storage capacity. Additional capacity shall be provided if precipitation, manure or wastes from other sources can enter the manure storage structure.</p> <p>Subrule 65.3(4) limits emergency applications to situations when there is an immediate need to apply manure to comply with the manure retention requirement of subrule 65.2(3) due to unforeseen circumstances [beyond the control of the owner] affecting the storage of the liquid manure and clarifies that an emergency does not include an immediate need to apply manure... caused by the improper design or management of the manure storage structure. The subrule also defines when the emergency criteria apply (February 1 – April 1 for frozen ground and December 21 – April 1 for snow-covered ground) and specifies procedures for emergency application including notification requirements and location restrictions. The subrule does not apply to small AFOs or liquid manure injected or incorporated the same day.</p> <p>Application of dry or liquid manure on frozen or snow-covered cropland should be avoided where possible. If manure application must take place</p>	State regulation IAC 567-65.2(3)a, 65.3(5)c, and Appendix A

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						<p>in the winter time, the following are guidelines to minimize runoff and subsequent loss of nutrients.</p> <ul style="list-style-type: none"> • Apply manure where slopes are $\leq 4\%$ or where control practices prevent runoff from reaching surface water or groundwater during winter. • On a terraced or sloping field, avoid application to areas that drain to tile intakes that directly discharge to surface water or groundwater. • Do not apply manure in grassed waterways. • Apply manure early in winter before significant snowfall. • Avoid application near tile intakes, ditches, gullies, areas of concentrated flow, creeks, streams, lakes, and other surface water. • Avoid application near water wells, sinkholes, losing streams, areas with shallow bedrock, agricultural drainage wells, or other pathways to groundwater. • Do not apply manure on top of deeper snow cover, especially in late winter. • Applying manure on soybean stubble where less snow is captured is preferable to applying manure on standing cornstalks. • In late winter, wait until the snow has melted before applying manure. • Avoid application during active runoff events or when rainfall, snow, or warming conditions are predicted that could cause snowmelt or runoff. • Fields and tiles should be observed during snowmelt and runoff events to identify and remediate runoff. If discolored or odorous water is being discharged, immediate efforts should be taken to prevent the water from reaching surface water or groundwater and changes should be made to prevent the discharge from recurring. Sampling and 	

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						<p>analysis of runoff for N and P may be used to evaluate management practices to avoid wasting nutrients or causing water quality violations.</p> <p>Manure should not be spread on cropland subject to flooding more than once every ten years during frozen or snow-covered conditions.</p> <p>Land application of open feedlot effluent shall be conducted when weather and soil conditions are suitable:</p> <ul style="list-style-type: none"> • Land application areas are not frozen or snow-covered. • Temperatures during application are >32°F. • Precipitation has been ≤0.05 inch/day for each of the 3 days preceding application and no precipitation is occurring on the day of application. <p>* an AFO in which animals are confined to totally roofed areas; includes every AFO that is not an “open feedlot operation” as defined in 567—65.100(455B,459,459A)</p>	
Kansas		✓	✓			<p>Applicable to registered and NPDES-permitted operations:</p> <p>Unless approved in advance by the secretary, liquid waste, concentrated liquid animal waste, or other liquid process waste shall not be land-applied when the ground is frozen, snow-covered, or saturated, or during a precipitation event.</p> <p>Solid animal or other process wastes may be applied to frozen ground only if the proposed application site and practices ensure that the wastes will be retained at the application site.</p>	State regulation K.A.R. 28-18a-19(h)(1)-(2) (swine) and 28-18-13(h)(1)-(2) (non-swine)
Kentucky	✓	✓		✓		<p>Applicable to all operations > 10 acres and all CAFOs with individual NPDES permits:</p> <p>The AWQP states that operators should avoid spreading animal waste on frozen or snow covered land unless conditions allow no other reasonable</p>	State statute Ag Water Quality Act, Livestock BMP#11

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						<p>alternatives and special provisions are made to control runoff and pollution.</p> <p>Applicable to NPDES- and state-permitted CAFOs: Permitted manure application operations may not apply manures to frozen or snow covered soil...</p> <p>Applicable to all operations: NRCS 590 states nutrients must not be surface-applied if nutrient losses offsite are likely. This precludes spreading on:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils, and • when the top 2 inches of soil are saturated from rainfall or snow melt. <p>Exceptions for the above criteria can be made for surface-applied manure when specified conditions are met and adequate conservation measures are installed to prevent the offsite delivery of nutrients.</p> <p>NRCS 590 further states that manure should not be applied on frozen or snow-covered fields where subsequent rains could wash the manure off the field before nutrients have a chance to move into the soil. In addition, manure should not be applied in winter on crop fields that do not have a cover crop established to utilize available nitrogen.</p>	<p>590 standard Nutrient Application Timing and Placement</p>
Louisiana	✓					<p>Applicable to all operations: The 590 standard specifications prohibits application of nutrients under several conditions, including to soils with certain characteristics like frozen, snow-covered or saturated, and in winter for spring seeded crops.</p>	<p>590 standard Specifications, Land Application Guidelines</p>
Maine			✓			<p>Applicable to operations requiring a nutrient management plan:*</p> <p>1. Winter spreading prohibited. Except pursuant to a variance granted under subsection 2, a person may not spread manure on agricultural fields between December 1st of a calendar year and March 15th of the</p>	<p>State regulation Title 7, Chapter 747</p>

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						<p>following calendar year. This prohibition includes the spreading of manure and spraying or irrigation of liquid manure.</p> <p>2. Variance. Upon application to the commissioner, the commissioner may grant a variance to allow a person to spread manure during the winter due to financial hardship or other circumstances that necessitate the application. In granting a variance, the commissioner shall impose restrictions to minimize potential environmental degradation and prescribe actions to ensure future compliance.</p> <p>*NMPs are required of farms that: 1) The farm confine and feed 50 or more animal units at any one time; 2) utilize more than 100 tons of manure per year not generated on that farm; 3) are the subject of a verified complaint of improper manure handling, or; 4) store or utilize regulated residuals.</p>	
Maryland		✓	✓	✓		<p>Timing of nutrient application must be consistent with the guidelines in the Maryland Nutrient Management Manual, Section I-D.</p> <p>Applicable to operations requiring a nutrient management plan*: Winter Application is defined as: November 16 – February 28 for the years 2012 – 2015 November 2 – February 28 for counties east of the Chesapeake Bay and the Susquehanna River and November 16 – February 28 for all other counties after July 1, 2016.</p> <p>The Nutrient Management Manual (I.D.III.D) allows winter application of organic fertilizer if 1) the operation has inadequate storage, 2) the nutrient source is non-stackable; and 3) there is no other reasonable option to manage it. The following restrictions apply to any such winter application:</p>	<p>State regulation COMAR 15.20.08.05H</p> <p>State guidance Maryland Nutrient Management Manual, Section I.D</p>

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						<p>1. Nutrient application is prohibited during the winter if the organic nutrient source is stackable (equal to or less than 60 percent moisture content, such as poultry litter), or adequate storage is available.</p> <p>2. Nutrient application is prohibited when the soil is saturated, when the ground is covered with snow, or on hard-frozen ground.</p> <p>3. Nutrient application is prohibited to land with a slope greater than 7 percent.</p> <p>4. Rates of application in the winter shall be minimized and available acreage used to the greatest extent practical. In no case shall the application rate per acre exceed the one-year phosphorus removal rate for the next harvested crop.</p> <p>5. Winter applications shall be by injection only and made into existing vegetative cover, small grain crops, or established hay fields and pastures. Injection into existing cover may be effected, for example, using vertical tillage equipment such as a Turbo-Till® or with a knifed injection system which minimizes soil disturbance and maximizes vegetative cover. Vegetative cover shall be maintained as such until March 1.</p> <p>6. Applications required in emergency situations such as imminent overflow of a storage facility shall be managed in consultation with the Maryland Dept. of Agriculture. Operators in such situations shall contact the MDA regional nutrient management representative for guidance.</p> <p>I.D.III.E.1. Prohibition against Winter Application Except as provided in subsections III.E.2 and III.E.3, after July 1, 2016, a person may not make a winter application of a nutrient source to agricultural land. [III.E.2 extends the prohibition deadline to February 28, 2020, for dairy and livestock operations with less than 50 AUs. III.E.3 exempts potash, liming materials, manure deposited directly by</p>	

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						<p>livestock, and certain nutrients applied for greenhouse production and for certain vegetable crops, small fruit crops, small grain crops, and cool season grass sod production.]</p> <p>*NMPs are required of all farmers grossing \$2,500 a year or more or livestock producers with 8,000 pounds or more of live animal weight.</p>	
Massachusetts				✓		<p>Applicable to all operations: Identical to national 590 standard</p>	590 standard Nutrient Application Timing and Placement
Michigan		✓		✓		<p>Applicable to all operations: <i>Generally Accepted Agriculture Management Practices</i> (GAAMP) state that application of manure on frozen or snow-covered soils should be avoided, but when necessary solid manures should be applied to fields with slopes of $\leq 6\%$; and liquid manures should be applied to fields that have a slope of $\leq 3\%$. In fields where winter manure will be applied conservation practices (such as vegetative buffer strips) should be used to control runoff and erosion to surface waters. Livestock producers should pay particular attention to field slopes and manure application rates.</p> <p>The GAAMPs also recommend maintaining a 150 foot buffer from surface water inlets and areas of concentrated flow. Utilizing a field-by-field assessment such as the Manure Application Risk Index (MARI) to evaluate fields acceptable for winter spreading is also recommended.</p> <p>NRCS 590 prohibits manure application when the top 2 inches of soil are saturated from rainfall or snow melt, or if the Manure Risk Index (MARI) rating is not “Low” or “Very Low”.</p> <p>Applicable to NPDES-permitted CAFOs:</p>	Michigan Right to Farm Act Act 93 of 1981 590 standard Nutrient Application Timing and Placement General Permit

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						The General Permit prohibits the surface application of CAFO waste without incorporation to frozen or snow-covered ground, except in accordance with the Department 2005 Technical Standard for the Surface Application of CAFO Waste on Frozen or Snow-Covered Ground Without Incorporation or Injection. CAFO waste must be injected or surface applied and incorporated within 24 hours if the ground is frozen or snow covered. CAFO waste may be applied on frozen or snow-covered ground with incorporation or injection only after completion of a field-by-field assessment to identify areas where runoff will not reach surface waters. Such areas must be documented in the CNMP and are determined by a Manure Application Risk Index (MARI) score of 37 or lower and an onsite inspection that considers slope, location of surface waters, and conduits to surface water.	Effluent Limitations And Monitoring Requirements
Minnesota		✓	✓	✓		<p>Applicable to NPDES- and state-permitted operations: MPCA Chapter 7020 states that manure or process wastewater must not be applied to frozen or snow-covered soils in special protection areas.</p> <p>Applicable to all operations: NRCS 590 states that, for manure application on high STP soils (>150 ppm Bray P1 or >120 ppm Olsen), manure and commercial N and P fertilizer may not be applied to frozen, snow-covered or actively thawing areas having certain conditions, e.g.:</p> <ul style="list-style-type: none"> • Within 300' of sensitive features; • Uncontrolled ephemeral erosion • Frequently flooded soils; • When sheet and rill soil losses are > 4 t/ac/yr; • Any actively thawing field draining to surface waters. 	<p>State regulation MPCA Chapter 7020.2225, subpart 6</p> <p>590 Standard MN NRCS 590</p>

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>Applicable to NPDES-permitted CAFOs:</p> <p>The General Permit states that liquid Manure shall not be surface-applied when both 1) soils at the land application area are frozen or snow-covered, and 2) during the time period beginning on December 1 and ending when soils of the land application area are no longer frozen or snow-covered, except emergency applications (the permit includes additional restrictions addressing slope, application rate, and setbacks from sensitive features for emergency applications);</p> <p>Solid Manure may be land applied when both 1) soils at the land application area are frozen or snow-covered, and 2) during the time period beginning on December 1 and ending when soils of the land application area are no longer frozen or snow-covered if certain conditions are met: 1) setbacks from sensitive features, 2) no active snowmelt that can create runoff (defined in GP), 3) less than 50% probability of rainfall >0.25" within 24 hours, 4) slopes $\leq 6\%$, 5) no water or ice occupying "depressional storage areas" (furrows) in the field, and 6) P Index rating ≤ 2.</p>	General permit II.B.4.b
Mississippi		✓		✓		<p>Applicable to all operations:</p> <p>The 590 standard is identical to the national standard with the addition of specified adequate treatment level and conditions for winter applications of manure:</p> <ul style="list-style-type: none"> • when field slope is less than 5%, • when crops are actively growing, • when a minimum forage height of 4 inches is maintained, • when specifically addressed in the nutrient management plan and the amount and form of nutrients to be applied does not exceed agronomic recommendations, and • when the buffer widths for intermittent streams and surface water bodies are increased from 50 feet to 100 feet. 	590 standard Nutrient Application Timing and Placement

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						Applicable to NPDES-permitted CAFOs: Wastewater shall not be applied when the ground is frozen or saturated or during rainfall events.	General permit Act 4, L7
Missouri	✓					Applicable to NPDES-permitted CAFOs: Manure will not be surface applied to frozen, snow-covered or saturated soils.	State technical standards III.A2.(3)d
Montana		✓				<p>Applicable to NPDES-permitted CAFOs: Process wastewater or manure may not be spray irrigated on frozen ground.</p> <p>Surface broadcast, injection, or incorporation of liquid manure or process wastewater should not be applied on frozen or snow-covered ground. If application to frozen or snow-covered ground is absolutely necessary, the producer shall notify the Department prior to application so that the Department may review buffer zone requirements with the producer and respond to inquiries from the public.</p> <p>Application of dry or solid manure on frozen or snow-covered ground should be avoided.</p> <p>Applicable to NPDES-permitted CAFOs*: NRCS 633 states:</p> <ul style="list-style-type: none"> • For agricultural land when vegetation is not harvested, organic nutrients should be applied to frozen, saturated, and snow-covered soils only in emergency-type situations and application should be timed to periods of greatest plant nutrient uptake. • For irrigated lands, application timing should consider expected rainfall periods, precipitation, frozen soil, and snow melt so that runoff does not occur. 	<p>State technical standards document DEQ 9 Section 4 Table 5</p> <p>State technical standards document DEQ 9 Attachment 5 (NRCS 633)</p>

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						<ul style="list-style-type: none"> For water quality protection, wastes shall not be applied to frozen ground or snow-covered ground. <p>* DEQ 9 refers to the NRCS 633 standard only as an alternative to the methods specified in Section 6 (Technical Standards for Nutrient Management). The technical standard is not clear with regard to whether the application timing restrictions in NRCS 633 would supersede those in Section 4 if the 633 standard is used in lieu of the nutrient management specifications in Section 6.</p>	
Nebraska				✓		<p>Applicable to NPDES-permitted CAFOs: The General Permit and Title 130 specify that for a field or field segment with a high or very high P risk assessment rating, there shall be no application of manure, litter, or process wastewater when the soil is frozen, or snow or ice covered.</p> <p>Applicable to all operations*: The 590 standard requires operators to identify low risk fields for surface application of nutrients on frozen and snow-covered-soils. When necessary to apply nutrients on frozen or snow-covered soils use application guidelines in Section 11.</p> <p>Section 11 defines “frozen soil” and “snow-covered soil” and states: b) NMPs and CNMPs should identify lower risk fields... for spreading and stacking/stockpiling manure on frozen or snow-coved soils based on the following: i) Low delivery potential (Phosphorus-Index rating score of 3.0 or less), ii) Manure application rates are not more than those listed in the Phosphorus-Index Summary developed for the field,</p>	<p>General Permit Part III.G(3), Page 13</p> <p>State regulations Title 130, Chapter 11, Section 013</p> <p>590 standard 1)e) and section 11</p>

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						<p>iii) Slope of 12% or less, iv) Greater than 30% ground cover by plants or crop residues, v) Existing land treatment conservation practices (e.g. buffers, field borders, filter strips) are in average condition and maintained, vi) Management practices (i.e. no-till, mulch-till, contour farming, etc.) are appropriate for low erosion and runoff, vii) State required setbacks from surface water (e.g. bed and bank streams, wetlands, lakes, etc.) are respected, and viii) No manure is applied within 100 feet of drainage tile inlets that outlet directly into surface water.</p> <p>c) Surface application of manure is restricted on frozen ground... and/or snow-covered soils...; except when the above field conditions... are met and the application event complies with all applicable Federal, State and local laws and regulations.</p> <p>d) Surface application of commercial fertilizer is restricted on frozen ground... and/or snow-covered soils...; except when the above field conditions... are met and the application event complies with all applicable Federal, State and local laws and regulations and applicable setbacks.</p> <p>e) Consider the following guidelines during winter application of manure:</p> <p>i) Apply to leveler fields... without channelized flow, ii) Apply to fields... farthest from surface water, conduits to ground water and areas of concentrated flow, iii) When possible, apply to the driest fields..., and iv) Minimize manure application to grass waterways.</p>	

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						*It is not clear whether the 590 standard applies to permitted CAFOs; EPA assumes that the restrictions in the General Permit rule.	
Nevada				✓		Identical to national 590 standard	590 standard Nutrient Application Timing and Placement
New Hampshire					✓		
New Jersey					✓	<p>Applicable to all operations: Nutrients must not be surface-applied if offsite losses are likely. This may preclude spreading on:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils, and • when the top 2 inches of soil are saturated from rainfall or snow melt. <p>Exceptions for the above criteria can be made for surface-applied manure when specified conditions are met and/or adequate conservation measures are installed to prevent the offsite delivery of nutrients. The adequate treatment level and specified conditions for winter applications of manure must be defined by NRCS in concurrence with the NJDEP. At a minimum, the following criteria shall be used for application areas with a risk of offsite runoff:</p> <ul style="list-style-type: none"> • Phosphorus Index of Medium or less; • 50% or more living vegetative or crop residue surface cover; 	590 standard Nutrient Application Timing and Placement

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	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<ul style="list-style-type: none"> • minimum 100' setback from surface waters; • spreading rate not to exceed nutrient uptake of the following crop. 	
New Mexico	✓					<p>Applicable to NPDES-permitted CAFOs: Waste shall not be applied to land when the ground is frozen, saturated with water, or during rainfall events.</p> <p>Applicable to all operations: Identical to national 590 standard</p>	<p>General permit Part II.A.5.b.ii.</p> <p>590 standard Nutrient Application Timing and Placement</p>
New York		✓		✓		<p>Applicable to all operations: NRCS 590 states that nutrients must not be mechanically surface-applied if a high probability of offsite nutrient loss is identified. Except as specifically defined in this section, this precludes spreading when the following field conditions are present:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils or • when soils are saturated from rainfall or snow melt, as indicated by visible water on the soil surface with the potential to runoff (isolated areas of saturation not prone to runoff must be avoided, but do not prohibit spreading on a given field). <p>If nutrient applications are made according to the criteria and conservation measures in one or more of the scenarios in this section to safeguard against offsite delivery, then such applications may be made to frozen and/or snow covered soil.</p> <p>Scenario 1: Commercial fertilizers may be applied during frozen, but not snow covered, soil conditions to fields in close grown crops, such as hay or small grains, and in accordance with the Cornell University Nutrient Guidelines, NY P Index, NY NLI, and RUSLE2.</p>	<p>590 standard Nutrient Application Timing and Placement – Frozen, Snow Covered, and/or Saturated Conditions</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>Scenario 2: When conditions allow, manure may be frost-injected or immediately incorporated upon application when soils are frozen and/or snow covered and in accordance with the general setback requirements, Cornell University Nutrient Guidelines, NY P Index, NY NLI, and RUSLE2.</p> <p>Scenario 3: In instances where mechanical surface applications of manure, litter, or process wastewater to frozen and/or snow covered soils are necessary, the applications will:</p> <ul style="list-style-type: none"> • be in accordance with the Cornell University Nutrient Guidelines, NY P Index, NY NLI, and RUSLE2; • be based on a check of the 48 hour weather forecast to assess if rainfall and/or temperatures are predicted to cause snowmelt and/or runoff conditions; • not be applied to soils designated by the soil survey as frequently flooded; • be in accordance with Section 1 (“Limestone areas”) in “Manure and Groundwater: the Case for Protective Measures and Supporting Guidelines” for fields with soils less than 40 inches deep over carbonate bedrock; • not be within a 100-foot flow path distance from surface waters, surface inlets, springs, sinkholes, and swallets; • not be within 100 feet of wells; and • not be applied in concentrated flow areas (i.e., well-defined channels within fields). 	
North Carolina	✓					<p>Applicable to NPDES-permitted CAFOs: Waste shall not be applied on land that is flooded, saturated with water, frozen or snow covered at the time of land application.</p>	<p>General permit: III.26</p> <ul style="list-style-type: none"> - Cattle - Poultry - Swine

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						Applicable to all operations: Nutrients must not be surface-applied if nutrient losses offsite are likely, such as with frozen and/or snow covered soils, and saturated soils. Waste shall not be applied on land that is flooded, saturated with water, frozen or snow covered at the time of land application.	590 standard Nutrient Application Timing and Placement
North Dakota				✓		Applicable to NDPDES-permitted CAFOs: Manure should not be applied to frozen, snow covered or saturated soils if there is a likelihood of runoff. Manure can be land applied during frozen conditions if it is applied on land where runoff is contained and does not drain off during spring runoff. Operators should consider land with slopes of less than 6 percent, where there is stubble or vegetative cover and less than 8 inches of snow on the ground surface.	State guidance North Dakota Livestock Program Design Manual Section 7.6.5. (Page 48)

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
Ohio		✓		✓		<p>Applicable to NPDES-permitted CAFOs: Every attempt shall be made... to avoid land application during frozen or snow covered ground conditions because of lack of agronomic benefit and high risk of pollution of surface waters... The nutrients in the manure applied on frozen and/or snow covered ground shall be included in the manure application rate calculations for the next crop.</p> <p>If practical, manure should be injected and/or incorporated within 24 hours. Otherwise, the following frozen and/or snow covered ground restrictions are mandatory (paraphrased)</p> <ul style="list-style-type: none"> • Investigate other manure disposal locations. • Stockpile solid manure rather than spreading. • Apply only limited quantities of manure to address storage limitations. • Maintain records for applications on frozen or snow covered ground that include: date, amount applied, location, acres applied to, weather and soil conditions, and reason for applying manure. <p>The following criteria must be met per application event per field per winter season:</p> <ul style="list-style-type: none"> • The field must have $\geq 90\%$ surface residue cover, and vegetation/residue shall not be covered by ice and/or snow; • The maximum application rate is 5,000 gal/acre for liquid manure, 10 wet tons/acre for solid manure with $>50\%$ moisture, and 5 wet tons/acre for solid manure with $<50\%$ moisture; • Manure shall not be applied on more than 20 contiguous acres. Areas used for application are to be the furthest from surface waters and present the least potential for runoff; 	Individual permits Attachment VII, B.5

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<ul style="list-style-type: none"> • Setbacks from surface waters and conduits to surface waters must be a minimum of 200 feet and have at least 90% surface residue cover, and vegetation/residue shall not be completely covered by ice and/or snow; • For fields with slopes > 6%, manure shall be applied in alternating strips 60 to 200 feet wide generally on the contour, or only on alternative strips for contour-stripped fields with alternative strips in grass or legume. The application rate shall be determined for each separate application strip area, not area of entire field; • Manure phosphate applications exceeding 250 pounds per acre are prohibited. <p>If the permittee surface applies manure on frozen or snow covered ground, concentrated field surface drainage and tile outlets shall be visually monitored at the conclusion of the manure application, and periodically afterwards when weather is likely to produce manure runoff including when temperatures rise, snow melts, and in conjunction with rainfall, etc., until the manure has been assimilated into the field and is no longer likely to discharge into waters of the State. If the land applied manure discharges to waters of the State, then the permittee shall notify Ohio EPA within two hours of detection of the runoff event... [A] discharge of manure to waters of the State from land application on frozen and/or snow covered ground that is not the result of a precipitation event is prohibited and a violation of the permit.</p> <p>The permit includes criteria based on discharge NH₃ concentration and noncompliance that result in prohibited application on frozen/snow covered ground.</p>	

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						When phosphate applications >250 lbs/acre (based on application equipment limitations) the manure shall not be applied on either frozen or snow covered ground.	Individual permits Attachment VII, A.4.h(3)iii
Oklahoma	✓					<p>Applicable to NPDES-permitted CAFOs: Waste shall not be applied to land when the ground is frozen, saturated with water, or during rainfall events.</p> <p>Applicable to all operations: The 590 standard states that nutrients must not be surface-applied if nutrient losses offsite are likely. This precludes spreading on:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils, and • when the top 2 inches of soil are saturated from rainfall or snow melt. 	<p>General permit Part II.A.5.b.ii</p> <p>590 standard Nutrient Application Timing and Placement</p>
Oregon		✓		✓		<p>Applicable to NPDES-permitted operations: The General Permit allows waste application on frozen soil only if such applications are addressed by the Animal Waste Management Plan, discharge to waters of the state does not occur, and land applications do not contribute to violation of state water quality standards. Waste applications to frozen soil must be addressed in the permittee's Animal Waste Management Plan (AWMP) including identification of receiving fields (with aerial photos, soil and topographic maps, and nearby surface waters), estimated waste amounts and types, estimated timing, and descriptions of structural practices to prevent discharges during application and after the soil thaws as well as monitoring and reporting to demonstrate compliance with frozen soil application procedures. The AWMP must be submitted to Oregon Department of Agriculture and approved prior to permit coverage.</p>	<p>General permit Land Application Limitations, S2.C. 3 (Page 9) and S3.B (Page 12) and S3.C.3(j) (Page 13)</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						Applicable to all operations*: Identical to national 590 standard	590 standard Nutrient Application Timing and Placement

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
Pennsylvania				✓		<p>Applicable to NPDES-permitted CAFOs:</p> <p>Winter Spreading: The permittee shall not spread manure during the winter [December 15 through February 28; or anytime the ground is frozen at least four (4) inches; or anytime that the ground is snow covered]... except as authorized in the permittee's Nutrient Management Plan, or unless the permittee has fully complied with 25 Pa. Code § 83.372, and has obtained a plan amendment due to unforeseen circumstances... The permittee shall notify DEP in writing within 7 days prior to land application of manure during the winter period. The permittee shall certify in the notification that:</p> <ul style="list-style-type: none"> a. Consistent with the approved NMP, actions have been taken to maximize the available capacity in the manure storage facility prior to the winter period to prevent pollution of ground and surface water, b. The storage has been properly operated and maintained, and c. Manure spread during the winter shall be applied in an amount and a manner consistent with the approved NMP. <p>The permittee may use the Department of Environmental Protection, Winter Period Application of Manure Notification form to provide the notification.</p> <p>7. There shall be no winter application,</p> <ul style="list-style-type: none"> 1) Within 100 feet of an above ground agricultural drain inlet where surface flow is toward the inlet, 2) Within 100 feet of a wetland on the National Wetland Inventory maps which is within the 100 year floodplain of an EV stream segment if surface flow is toward the wetland and 3) Unless the fields have 25% cover or an established cover crop... <p>Applicable to all operations:</p>	590 standard

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>The 590 standard* states that nutrients must not be surface-applied if nutrient offsite losses are likely. This precludes spreading on frozen and/or snow-covered soils when the top 2 inches of soil are saturated from rainfall or snow melt.</p> <p>Winter application of manure is not a preferred management action for addressing water quality, and therefore shall only be considered for use where it is a necessary for operation of the farm, and where fields identified for winter application are situated in such a way as to minimize the potential for manure or nutrient run off during the winter season.</p> <p>Exceptions for the no-winter-application criteria above can be made for surface-applied manure when conditions specified by Act 38 Regulations and the Act 38 Technical Manual are met and adequate conservation measures are installed to prevent the offsite delivery of nutrients. The following site and management factors must be considered: slope, organic residue and living covers, amount and form of nutrients to be applied, and adequate setback distances to protect local water quality. The Pennsylvania Winter Application Matrix must be completed and documented in the plan for any operation with the possibility of winter application.</p> <p>*Note: It is unclear whether the technical standards for permitted CAFOs include the 590 standard.</p>	Nutrient Application Timing and Placement
Rhode Island					✓		
South Carolina				✓		<p>Applicable to all operations: Identical to national 590 standard</p>	<p>590 standard</p> Nutrient Application Timing and Placement

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
South Dakota		✓				<p>Applicable to NPDES-permitted CAFOs: Process wastewater or manure shall not be spray irrigated on frozen ground.</p> <p>Application of dry or solid manure on frozen or snow-covered ground should be avoided. If manure will be applied to frozen or snow-covered ground, the producer shall 1) only apply manure on land with slopes less than 4%, 2) maintain a minimum 100-foot buffer zone to any natural or manmade drainage.</p> <p>Surface broadcast, injection, or incorporation of liquid manure or process wastewater should not be applied on frozen or snow-covered ground. If necessary to apply on frozen or snow-covered ground, the producer 1) should notify the department prior to application, 2) shall only apply liquid manure or process wastewater on land with slopes less than 4%, 3) shall maintain a minimum 100-foot buffer zone to any natural or manmade drainage.</p>	General permit 1.4.4.2
Tennessee	✓					<p>Applicable to NPDES-permitted CAFOs: Applying nutrients when the soils are frozen, saturated, or flooded is prohibited. (Note, prohibition alluded to in waste storage requirements.)</p> <p>CAFOs must ensure that recipients of transferred manure sign an agreement that includes the following condition: Do not apply litter, manure and/or process wastewater when the ground is frozen or on steep slopes subject to flooding, erosion or rapid runoff.</p>	State regulations TDEC Rule 1200-04-05-.14(14)(b) and Appendix A.I
Texas			✓			<p>Applicable to TPDES CAFOs and State-only CAFOs: Both 30 TAC Chapter 321 and the General Permit state that land application shall not occur when the ground is frozen or saturated or during rainfall events unless in accordance with 321.39(b)(3) [retention</p>	State regulation 30 TAC Chapter 321.40(f), CAFO Land Application Requirements

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>control structure is in danger of imminent overflow from chronic or catastrophic rainfall or catastrophic conditions].</p> <p>Applicable to TPDES CAFOs and State-only CAFOs: Identical to national 590 standard.</p>	<p>General permit III.11.b.2, Land Application Requirements</p> <p>590 standard Nutrient Application Timing and Placement</p>
Utah				✓		<p>Applicable to all operations: Nutrients must not be surface-applied if nutrient losses offsite are likely. This precludes spreading on:</p> <ul style="list-style-type: none"> • frozen and/or snow-covered soils, and • when the top 2 inches of soil are saturated from rainfall or snow melt. <p>Exceptions for the above criteria can be made for surface-applied manure when the Utah Manure Application Risk Index (UMARI) is used and the risk is “Low”.</p>	<p>590 standard Nutrient Application Timing and Placement</p> <p>NRCS guidance Utah Manure Application Risk Index (UMARI) Table 14, p. 12</p>
Vermont			✓			<p>Applicable to NPDES-permitted Medium CAFOs: ...wastes shall not be applied to land from December 15th through April 1st of each year unless explicitly authorized by the Secretary of Agriculture...and approved on a case-by-case basis by the Secretary of Natural Resources.</p> <p>...wastes shall not be applied to land when the ground is frozen...</p>	<p>General Permit for Medium CAFOs III.B.2 and 3</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>Applicable to NPDES-permitted CAFOs: Identical to the national standard with respect to frozen/snow-covered soils, with the following addition: The Vermont Accepted Agricultural Practices (AAP's) impose a manure spreading ban between December 15 and April 1. Waivers for the winter spreading ban may be granted by the VT Agency of Agriculture, Food and Markets on a case-by-case basis. These waivers should be coordinated with NRCS when the waivers involve producers with NRCS funded nutrient management plans.</p> <p>Applicable to all operations: Accepted Agricultural Practice Regulation Manure shall not be spread between December 15 and April 1 unless the Secretary grants an exemption because of an emergency situation.</p>	<p>590 standard Nutrient Application Timing and Placement</p> <p>State regulation Accepted Agricultural Practice Regulation, Section 4.03(c) and (d)</p>
Virginia		✓				<p>Applicable to NPDES- and state-permitted CAFOs: NMP Special Condition #9 prohibits spreading liquid manure/effluent to frozen, ice or snow covered ground. In addition, application of dry or semi solid manure and poultry litter should be avoided on frozen, ice or snow covered ground (Special Condition #23). If necessary applications may be made to fields that have: (i) slopes $\leq 6.0\%$, (ii) 60% uniform ground cover from crop residue or an actively growing crop with an exposed plant height of $> 3"$, (iii) ≥ 200-foot vegetated or adequate crop residue buffer between the application area and all surface water courses, and (iv) soils characterized by USDA as "well drained".</p> <p>On fields not listed as environmentally sensitive, no liquid manure or poultry litter applications more than 60 days prior to spring planting. No applications of semi-solid beef manure or semi-solid dairy manure dairy</p>	<p>Individual permits NMP Special Conditions: #9 and #23 <i>Manure Spreading Schedule</i> (#21 for poultry)</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						manure for operations using straw or sawdust bedding more than 90 days prior to spring planting on fields having (i) slopes < 7% or (ii) having at least 60% uniform ground cover from crop residue.	
Washington				✓		Applicable to all operations: Identical to 590 national standard.	590 standard Nutrient Application Timing and Placement
West Virginia	✓					Applicable to NPDES-permitted CAFOs: The standard states that manure should not be applied to frozen, snow-covered, or saturated ground. Applicable to all operations: Identical to national 590 standard.	Technical Standards For West Virginia Concentrated Animal Feeding Operation Nutrient Management Planning Draft July 2011 590 standard Nutrient Application Timing and Placement
Wisconsin		✓	✓	✓		Applicable to Large CAFOs and WPDES-permitted operations: On a field with soils that are 60 inches thick or less over fractured bedrock, manure or process wastewater may not be applied on frozen ground or where snow is present. Manure or process wastewater may not be applied on fields when snow is actively melting such that water is flowing off the field. Solid manure may be surface applied on frozen ground in accordance with specific restrictions based on slope, management, and other site characteristics (included in Table 4 of the regulation) or immediately	State regulation NR243 14(2)(b)10 and 11, 14(2)(c), 14(6) and 14(7) and NR214.17(2) – (6)

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>incorporated. Solid manure may be applied to snow covered ground as follows:</p> <p>If <1" of snow is present, solid manure may be surface applied or immediately incorporated</p> <p>If 1-4" of snow is present, solid manure must be applied in accordance with Table 4 or immediately incorporated</p> <p>If >4" of snow is present, solid manure must be applied in accordance with Table 4 and may not be incorporated.</p> <p>Solid manure may not be surface applied from February 1 – March 31 if ≥ 1" of snow is present or the ground is frozen.</p> <p>Liquid manure may not be surface applied on frozen ground except for emergency situations. Liquid manure may be injected or immediately incorporated on frozen ground except if prohibited due to snow cover.</p> <p>Liquid manure may be applied to snow covered ground as follows:</p> <p>If <1" of snow is present, liquid manure may be surface applied, injected, or immediately incorporated</p> <p>If 1-4" of snow is present, liquid manure may be immediately incorporated or injected; liquid manure may not be surface applied except for emergencies of if the CAFO is an existing source prior to 1/1/2010 with <180 days of liquid manure storage.</p> <p>If >4" of snow is present, liquid manure may be immediately injected; liquid manure may not be surface applied or immediately incorporated except for emergencies of if the CAFO is an existing source prior to 1/1/2010 with <180 days of liquid manure storage.</p> <p>Liquid manure may not be surface applied from February 1 through March 31, except for department-approved emergencies.</p>	

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>The regulation defines emergency applications for liquid manure and includes restrictions for such applications.</p> <p>Liquid manure that is frozen and cannot be transferred to a manure storage facility may be surface applied on frozen or snow-covered ground in accordance with specified restrictions. Department notification is required during February and March if frozen liquid manure will be surface applied more than 5 days in any one month.</p> <p>As an alternative to the above restrictions, the regulations allow liquid manure application to frozen or snow covered ground if done in accordance with the state regulations that apply to landspreading systems (NR 214.17).</p> <p>Applicable to all operations:</p> <p>b. When frozen or snow-covered soils prevent effective incorporation at the time of application and the nutrient application is allowed, implement the following:</p> <p>(1) Do not apply nutrients within the Surface Water Quality Management Area (SWQMA) except for manure deposited through winter gleaning/pasturing of plant residue.</p> <p>(2) Do not apply nutrients to locally identified areas delineated in a conservation plan as contributing nutrients to direct conduits to groundwater or surface water as a result of runoff.</p> <p>(3) Do not exceed the P removal of the following growing season's crop when applying manure. Liquid manure applications are limited to 7,000 gallons per acre. The balance of the crop nutrient requirement may be applied the following spring or summer. Winter applications shall be conducted according to Section VII.B.</p>	<p>590 standard Section II.A.2 Nutrient Application Prohibitions</p>

State	Type of Restriction					Restriction Details	Mechanism and Source
	Ban	Based on Form/Method	Exemption/ Emergency Only	Based on Location	None		
						<p>(4) Do not apply nutrients on slopes greater than 9%, except for manure on slopes up to 12% where cropland is contoured or contour strip cropped.</p> <p>(5) Do not apply N and P in the form of commercial fertilizer. An exception is allowed for grass pastures and on winter grains that do not fall within a prohibition area defined by V.A.2.</p>	
Wyoming			✓			<p>Applicable to NPDES-permitted CAFOs: Manure or process wastewater shall not be applied to frozen or snow covered ground. If application to frozen or snow covered ground is absolutely necessary, the operator shall notify the WQD prior to any application.</p>	<p>State Technical Standards Manure Application</p>